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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/737,397

12/15/2003

Christopher L. Kelley

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01/22/2007

TEXAS INSTRUMENTS INCORPORATED
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EXAMINER

MACARTHUR, SYLVIA

ART UNIT

PAPER NUMBER

1763

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/737,397	Applicant(s) KELLEY, CHRISTOPHER L.	
	Examiner Sylvia R. MacArthur	Art Unit 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 8/22/2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 10-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 19 and 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see pages 11-15 regarding the prior art used in the previous action is a wafer chuck not a temperature control assembly, filed 8/22/2006, with respect to Yamada and Cole Sr. et al have been fully considered and are persuasive. The prior art of Yamada and Cole Sr. et al has been withdrawn.
2. The examiner noted the arguments in the office action mailed 4/3/2006 argued that the prior art of Leahey fails to teach the recited cooling conduit. The examiner introduces the prior art of Najun et al (US 5,345,534) to teaches cooling a transmission window (aperture).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 5, and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leahey (US 6,367,410).

With respect to Claim 1: Leahey discloses a temperature control assembly (Fig. 12 Item 908, Column 9 Lines 53-67 and Column 10 Lines 1-9) comprising: a housing of generally annular cross-section, wherein the housing comprises: an aperture generally disposed along a

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center axis of the housing (Fig. 12 Item 1212, Column 9 Lines 53-67 and Column 10 Lines 1-9); a first side disposed between the aperture and an outside edge of the housing and including a surface generally perpendicular to the center axis (Fig. 12 Item 1206, Column 9 Lines 53-67 and Column 10 Lines 1-9); a channel disposed through the surface (Fig. 12 Item 1214, Column 9 Lines 53-67 and Column 10 Lines 1-9); a second side disposed between the aperture and the outside edge and having a reflective appearance (Fig. 12 Item 908, Column 9 Lines 53-67 and Column 10 Lines 1-9); a plurality of sockets disposed between the surface and the second side and formed to accept a plurality of heating elements (Fig. 12 Item 1216, Column 9 Lines 53-67 and Column 10 Lines 1-9); and a flange disposed along the first side and having a plurality of holes arranged substantially to align the temperature control assembly for use in an etching process chamber assembly and to position the second side to face toward a process chamber of the etching process chamber assembly (Fig. 12 Item 1202, Column 9 Lines 53-67 and Column 10 Lines 1-9); a fastener coupled to the housing and operable to associate the cooling conduit with the housing (Fig. 12 Item 1210, Column 9 Lines 53-67 and Column 10 Lines 1-9); and a mounting block coupled to the cooling conduit (Fig. 12 Item 908, Column 9 Lines 53-67 and Column 10 Lines 1-9). In Figure 12 the upper most socket (Item 1216) has a larger volume than the other sockets and the cooling conduit adjacent to the uppermost socket contains two holes, showing that the inlet and outlet of the cooling fluid are at this location. Therefore, the uppermost socket is used as a mounting block to couple the cooling conduit to a coolant source.

It is noted that Leahey et al teaches a cooling assembly as illustrated in Fig.9, but the assembly is uses fan cooling to cool the aperture. Thus, Leahey fails to teach a cooling conduit and moutning block as recited in the claimed invention.

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Najm et al teaches a cooling conduit (pipes 24), see Fig. 2 and col. 2 lines 37-56. The cooling conduit flows through a passageway 27 in mounting block (assembly 3). The motivation to modify the thermal control apparatus of Leahey et al with the window cooling assembly of Najm et al is that it provides the specific structure for cooling conduits used to maintain the temperature of the window assembly. Najm et al teaches in col. 1 lines 50-63 that placing the cooling conduit around the center adjacent the window 12 also enhances the temperature uniformity of the wafer. Thus, it would have been obvious for one of ordinary skill in the art at the claimed invention to provide the cooling conduits of Najm et al as the means of temperature control of the aperture as an alternative to the fan cooling used by Leahey et al.

Claim 1 also differs from Leahey in reciting that there are a plurality of fasteners while Leahey only teaches one fastener. The use of a one piece construction instead of the structure would be merely a matter of obvious engineering choice. *In re Larson*, 340 F.2d 965, 968, 144 USPQ 347, 349 (CCPA 1965). Also, it is obvious to make the fasteners portable, integral, separable, or adjustable. *In re Lindberg* 93 USPQ 23; *In re Larson et al.* 144 USPQ 347; *In re Dulberg* 129 USPQ 348; *In re Stevens* 101 USPQ 284.

With respect to Claim 5: Leahey discloses the housing is formed of aluminum (Column 9 Lines 59-61).

With respect to Claim 8: Leahey discloses the mounting block is formed from a metal complementary to the non-corrosive metallic material (Column 9 Lines 59-61).

With respect to Claim 9: Leahey discloses the groove has a radius substantially equal to the radius of the cooling conduit (Fig. 12 Item 1214).

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4. Claims 2-4, 6-7 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leahey (US 6,367,410) in view of Najm et al as applied in claims 1,5, 8 and 9 above, in further view of Siegfried (US 6,984,942).

The teachings of Leahey et al as modified by Najm were discussed above.

With respect to Claim 2: Leahey discloses a temperature control assembly in accordance with claim 1 as stated above.

Leahey does not expressly state the plurality of fasteners comprises: a plurality of first fasteners disposed within a plurality of cavities, wherein the cavities are formed in the surface such that the first fasteners disposed within the cavities do not extend past the surface; and a plurality of second fasteners disposed along the housing adjacent to the groove such that the second fasteners do not extend past the surface. Najm et al also teaches o-rings 29 which function as fasteners according to col. 2 lines 53-56.

Siegfried discloses a temperature control assembly wherein at least two fasteners (Fig. 1 Item 110, Column 4 Lines 53-67) are disposed along the assembly adjacent to a groove such that the fasteners do not extend past the surface (Fig. 2 Item 216 and 214, Column 5 Lines 65-67 and Column 6 Lines 1-4). Leahey in view of Najm et al and Siegfried are analogous art because they are from the same field of endeavor, namely temperature control assemblies.

At the time of invention, it would have been obvious to a person of ordinary skill in the art to form the assembly of Leahey et al in view of Najm et al to include a plurality of fasteners are disposed along the assembly adjacent to a groove such that the fasteners do not extend past the surface in view of the teaching of Siegfried. The suggestions or motivations for doing so would have been to provide cooling to the peripheral edge of the temperature control assembly,

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to add structural rigidity and alignment force to the assembly (Column 4 Lines 52-67 and Column 5 Lines 1-3).

The plurality of first fasteners and the plurality of cavities in claim 2 are described by the applicant to have criticality by allowing the assembly to couple to another component of the etching process chamber assembly in a flush manner (Specification Paragraph 21).

Leahey discloses a fastener (Fig. 12 Item 1210, Column 9 Lines 53-67 and Column 10 Lines 1-9) that allows the assembly to couple to another component of the etching process chamber assembly in a flush manner. The plurality of first fasteners and the plurality of cavities in claim 2 are equivalent to the fastener of Leahey. An express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious In re Fout, 675 F.2d 297,213 USPQ 532 (CCPA 1982). Further, Substitution of equivalents requires no express motivation. *In re Fount*, 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152, USPQ (CCPA 1967).

With respect to Claim 3: Leahey discloses a temperature control assembly in accordance with claim 2 as stated above.

Leahey does not expressly state the vertical distance between the bottom of each of the cavities and the bottom of the channel is less than the vertical distance between the top of the cooling conduit as it rests in the channel and the bottom of the channel, such that when coupled to the housing the first fasteners associate the cooling conduit with the housing by clamping the cooling conduit within the channel.

The details of the assembly in claim 2 are described by the applicant as having criticality by allowing the assembly to couple to another component of the etching process chamber assembly in a flush manner (Paragraph 21).

Leahey discloses a fastener (Fig. 12 Item 1210, Column 9 Lines 53-67 and Column 10 Lines 1-9) that allows the assembly to couple to another component of the etching process chamber assembly in a flush manner. The details of the assembly in claim 3 and the fastener of Leahey are equivalents. An express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious In re Fout, 675 F.2d 297,213 USPQ 532 (CCPA 1982). Further, Substitution of equivalents requires no express motivation. *In re Fount*, 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152, USPQ (CCPA 1967).

With respect to Claim 4: Siegfried discloses fasteners (Fig. 2 Item 216 Column 4 Lines 53-67 and Column 5 Lines 1-3) that each include a curved surface that engages the outside surface of the cooling conduit (Fig. 2 Item 214 Column 4 Lines 53-67 and Column 5 Lines 1-3), such that when coupled to the housing the fasteners associate the cooling conduit with the housing by clamping the cooling conduit against the housing (Fig. 2 Item 216 Column 4 Lines 53-67 and Column 5 Lines 1-3).

Siegfried does not expressly state that the curved surface of the fasteners have a shorter radius than the outside surface of the conduit. However, where the only difference between the prior art and the claims is a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device is not patentably distinct from the prior art device. In Gardner v. TEC

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Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. Denied, 469 U.S. 830, 225 USPQ 232 (1984).

With respect to Claim 6: Siegfried discloses that the non-corrosive metallic material is copper (Column 4 Lines 60-67).

With respect to Claim 7: Siegfried discloses that the non-corrosive metallic material is stainless steel (Column 4 Lines 60-67).

Claim 19 differs from Leahey in reciting that there are a plurality of fasteners while Leahey only teaches one fastener. The use of a one piece construction instead of the structure would be merely a matter of obvious engineering choice. *In re Larson*, 340 F.2d 965, 968, 144 USPQ 347, 349 (CCPA 1965). Also, it is obvious to make the fasteners portable, integral, separable, or adjustable. *In re Lindberg* 93 USPQ 23; *In re Larson et al.* 144 USPQ 347; *In re Dulberg* 129 USPQ 348; *In re Stevens* 101 USPQ 284.

Leahey does not expressly state the plurality of fasteners comprises: a plurality of first fasteners disposed within a plurality of cavities, wherein the cavities are formed in the surface such that the first fasteners disposed within the cavities do not extend past the surface, and wherein the vertical distance between the bottom of each of the cavities and the bottom of the channel is less than the vertical distance between the top of the cooling conduit as it rests in the channel and the bottom of the channel, such that when coupled to the housing the first fasteners associate the cooling conduit with the housing by clamping the cooling conduit within the

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channel; and a plurality of second fasteners disposed along the housing adjacent to the groove such that the second fasteners do not extend past the surface, and wherein the second fasteners each include a curved surface that engages the outside surface of the cooling conduit, the curved surface having a shorter radius than the outside surface, such that when coupled to the housing the second fasteners associate the cooling conduit with the housing by clamping the cooling conduit against the housing. Note Najm et al teaches a plurality of fasteners, o-rings 29.

Siegfried discloses a temperature control assembly wherein at least two fasteners (Fig. 1 Item 110, Column 4 Lines 53-67) are disposed along the assembly adjacent to a groove such that the fasteners do not extend past the surface (Fig. 2 Item 216 and 214, Column 5 Lines 65-67 and Column 6 Lines 1-4). Leahey and Siegfried are analogous art because they are from the same field of endeavor, namely temperature control assemblies.

At the time of invention, it would have been obvious to a person of ordinary skill in the art to form the assembly of Leahey including a plurality of fasteners are disposed along the assembly adjacent to a groove such that the fasteners do not extend past the surface in view of the teaching of Siegfried. The suggestions or motivations for doing so would have been to provide cooling to the peripheral edge of the temperature control assembly, to add structural rigidity and alignment force to the assembly (Column 4 Lines 52-67 and Column 5 Lines 1-3).

The plurality of first fasteners and the plurality of cavities in claim 19 are described by the applicant to have criticality by allowing the assembly to couple to another component of the etching process chamber assembly in a flush manner (Specification Paragraph 21).

Leahey discloses a fastener (Fig. 12 Item 1210, Column 9 Lines 53-67 and Column 10 Lines 1-9) that allows the assembly to couple to another component of the etching process

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chamber assembly in a flush manner. The plurality of first fasteners and the plurality of cavities in claim 2 are equivalent to the fastener of Leahey. An express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious In re Fout, 675 F.2d 297, 213 USPQ 532 (CCPA 1982). Further, Substitution of equivalents requires no express motivation. *In re Fount*, 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152, USPQ (CCPA 1967).

Siegfried discloses fasteners (Fig. 2 Item 216 Column 4 Lines 53-67 and Column 5 Lines 1-3) that each include a curved surface that engages the outside surface of the cooling conduit (Fig. 2 Item 214 Column 4 Lines 53-67 and Column 5 Lines 1-3), such that when coupled to the housing the fasteners associate the cooling conduit with the housing by clamping the cooling conduit against the housing (Fig. 2 Item 216 Column 4 Lines 53-67 and Column 5 Lines 1-3).

Siegfried does not expressly state that the curved surface of the fasteners have a shorter radius than the outside surface of the conduit. However, where the only difference between the prior art and the claims is a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device is not patentably distinct from the prior art device. In Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. Denied, 469 U.S. 830, 225 USPQ 232 (1984).

With respect to Claim 20: Leahey discloses the housing is formed of aluminum (Column 9 Lines 59-61).

Siegfried discloses the non-corrosive material is copper (Column 4 Lines 60-67).


Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gat (US 5970214) teaches a heating device for semiconductor wafers.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sylvia R. MacArthur whose telephone number is 571-272-1438. The examiner can normally be reached on M-F during the hours of 8:30 a.m. and 5 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Sylvia R MacArthur
Patent Examiner
Art Unit 1763

January 8, 2007